Petr Stepanov

Materials science. Data analysis. Desktop and web applications development. UI/UX design.

stepanovps@gmail.com (419) 496-86-02 petrstepanov.com

Summary of Qualifications

Work Experience

Research Collaborator (On-Site)
Thomas Jefferson National Laboratory (JLab), Newport News, VA, USA. **Jul 2020 - Current**

Postdoctoral Researcher (Remote)
Catholic University of America (CUA), Washington, DC, USA. **Jul 2020 - Current**

Research Assistant
Bowling Green State University (BGSU), Bowling Green, OH, USA. **Aug 2014 - May 2020**

Frontend Developer, UI/UX Designer • Freelance **Sep 2012 - Current**

Full Stack Web Developer, Web Designer
Gridnine Systems, Moscow, Russia. **Apr 2011 - Aug 2014**

Computer Science Teacher
Phys-Tech College at MIPT, Moscow, Russia. **Oct 2009 - May 2011**

- Provided instructions and guidance to high school students on following computer courses: C/C++ programming, HTML, Adobe Photoshop and 3D Studio Max.

Research Scientist
Institute for Theoretical and Experimental Physics (ITEP), Moscow, Russia. **Sep 2008 - Apr 2011**

- Application of positron lifetime spectroscopy for studying the radioactive-induced defects in steels. Monte-Carlo particle simulations with Fortran 95. Maintaining software for CAMECA tomographic atom probe (MSVC). Application of CERN ROOT libraries for fitting and analysis of experimental spectra.

Computer Science Skills

- **Essentials**. Git, SVN, SSH, Linux, and Terminal usage. BASH scripting. IDEs: Eclipse, Xcode, Visual Studio Code (VS Code). Project management: JIRA, Trello.
- **Simulation and data analysis**: Geant4, CERN ROOT, MATLAB, Wolfram Mathematica, Maple.
- **Academic writing**: LaTeX, MS Office Suite, Zotero.
- **Data plotting**: Gnuplot, OriginLab, QtiPlot, SciDaVis, Grapher.
- **Desktop app development**. C/C++, GNU make, CMake. Frameworks: Qt, CERN ROOT, Geant4. Java and Swing. Python.
- **Frontend**: HTML, CSS (LESS and SASS), Bootstrap, responsive web design, JavaScript and jQuery, npm, gulp, AngularJS, React.js. Google Web Toolkit. PHP and WordPress themes development.
- **Backend**. Node.js, EJS, Java.
- **UI/UX design**. Figma, Sketch, InVision Studio, Adobe XD, Adobe Photoshop, Adobe Illustrator, Inkscape, Blasamiq, Blender.
- **Apple iOS**. Fundamental Swift skills. User interface development with UIkit and storyboards.

Material Research Skills

- **Characterization facilities**. Positron Lifetime and Doppler Broadening Annihilation Spectroscopy (PALS, DBAR). Atom Probe Tomography (ATP). Scanning Electron Microscopy (SEM). Transmission electron microscopy (TEM). Atomic Force Microscopy (AFM). UV-VIS Spectroscopy. Fourier Transform Infrared Spectroscopy (FTIR).
- **Material processing**. High-temperature annealing. Wet chemical etching. Electrical Contact Fabrication. Sample polishing.

Education

Bowling Green State University (BGSU) • Ohio, USA **Aug 2014 - May 2020**

Ph.D. in Photochemical Sciences • GPA 3.423. Novel developments in positron annihilation spectroscopy techniques—from experimental setups to advanced processing software. View manuscript.

- Application of positron lifetime spectroscopy for studying the radioactive-induced defects in steels. Monte-Carlo particle simulations with Fortran 95. Maintaining software for CAMECA tomographic atom probe (MSVC). Application of CERN ROOT libraries for fitting and analysis of experimental spectra.
- Application of positron lifetime spectroscopy for studying the radioactive-induced defects in steels. Monte-Carlo particle simulations with Fortran 95. Maintaining software for CAMECA tomographic atom probe (MSVC). Application of CERN ROOT libraries for fitting and analysis of experimental spectra.
- Application of positron lifetime spectroscopy for studying the radioactive-induced defects in steels. Monte-Carlo particle simulations with Fortran 95. Maintaining software for CAMECA tomographic atom probe (MSVC). Application of CERN ROOT libraries for fitting and analysis of experimental spectra.
- Application of positron lifetime spectroscopy for studying the radioactive-induced defects in steels. Monte-Carlo particle simulations with Fortran 95. Maintaining software for CAMECA tomographic atom probe (MSVC). Application of CERN ROOT libraries for fitting and analysis of experimental spectra.

Ohio Supercomputer Workshop • Ohio, USA **Jan 2017 - Feb 2017**

Hands-on sessions in Supercomputer Essentials. Introduction to the key developments in the supercomputer field.

- Application of positron lifetime spectroscopy for studying the radioactive-induced defects in steels. Monte-Carlo particle simulations with Fortran 95. Maintaining software for CAMECA tomographic atom probe (MSVC). Application of CERN ROOT libraries for fitting and analysis of experimental spectra.
- Application of positron lifetime spectroscopy for studying the radioactive-induced defects in steels. Monte-Carlo particle simulations with Fortran 95. Maintaining software for CAMECA tomographic atom probe (MSVC). Application of CERN ROOT libraries for fitting and analysis of experimental spectra.
- Application of positron lifetime spectroscopy for studying the radioactive-induced defects in steels. Monte-Carlo particle simulations with Fortran 95. Maintaining software for CAMECA tomographic atom probe (MSVC). Application of CERN ROOT libraries for fitting and analysis of experimental spectra.

British Higher School of Art and Design (BHSAD) • Moscow, Russia **Dec 2011 - Feb 2012**

Three-month intensive in Graphical Design and Visual Communications. Lectures and hands-on experience in graphic design and user interfaces.

- Application of positron lifetime spectroscopy for studying the radioactive-induced defects in steels. Monte-Carlo particle simulations with Fortran 95. Maintaining software for CAMECA tomographic atom probe (MSVC). Application of CERN ROOT libraries for fitting and analysis of experimental spectra.

National Research Nuclear University (MEPhI) • Moscow, Russia **Aug 2014 - May 2020**

B.S. and M.S. in Solid State Physics. Defect studies of neutron-irradiated nuclear power plant vessel steels by means of positron annihilation spectroscopy.

Featured Publications

- P. S. Stepanov, F. A. Selim et al. Interaction of positronium with dissolved oxygen in liquids. *Physical Chemistry Chemical Physics* **2020**, 22 (9), 5123-5131. 10.1039/c9cp06105c.
- P. S. Stepanov, F. A. Selim et al. A model for joint processing of LT and CDB spectra of dielectric nano-sized powders. *AIP Conference Proceedings 2182* **2019**. 10.1063/1.5135836.
- P Saadatkia, P Stepanov et al. Photoconductivity of bulk $SrTiO_3$single crystals at room temperature. *Materials Research Express* **2018**, 5 (1), 016202. 10.1088/2053-1591/aaa094.
- P.S. Stepanov, S.V. Stepanov et al. Developing New Routine for Processing Two-Dimensional Coincidence Doppler Energy Spectra and Evaluation of Electron Subsystem Properties in Metals. *Acta Physica Polonica A* **2017**, 132 (5), 1628-1633. 10.12693/aphyspola.132.1628.
- J. Ji, A. M. Colosimo et al. ZnO Luminescence and scintillation studied via photoexcitation, X-ray excitation and gamma-induced positron spectroscopy. *Scientific Reports* **2016**, 6 (1). 10.1038/srep31238.

Conferences

18th International Conference on Positron Annihilation (ICPA-18) **Aug 2018**

Orlando, FL, USA

Oral talk "Positions and Ps in Al_2O_3 Nanopowders

International Workshop on Physics with Positrons (JPos17) **Sept 2017**

JLab, Newport News, VA, USA

Poster "A routine of background subtraction from two-dimensional Doppler broadened spectra"

12th International Workshop on Positron and Positronium Chemistry (PPC12) **Sept 2017**

Maria Curie-Sklodowska University, Lublin, Poland

Poster "Developing new routine for processing two-dimensional coincidence Doppler energy spectra"

Ohio Photochemical Society Meeting (Oops) **May 2017**

Maumee Bay Lodge & Conference Center, Maumee, OH, USA

Poster "Developing new routine for background subtraction in two-dimensional coincidence Doppler broadening spectroscopy"

58th Electronic Materials Conference (EMC) **Jun 2016**

University of Delaware, Newark, DE, USA

Oral talk "High-Sensitivity Measurements of Defects in ZnO by Means of Digital Coincidence Doppler Broadening of Positron Annihilation Spectroscopy"

Annual Spring Meeting of the APS Ohio-Region **Apr 2016**

University of Dayton, Dayton, OH, USA

Oral talk "Identification of chemical environment of defects in ZnO by means of digital coincidence Doppler broadening of positron annihilation radiation"

Ohio Inorganic Weekend **Nov 2015**

Bowling Green State University, OH, USA

Poster "Approaching Structural Defect Characterization and their Chemical Identification by Means of Coincidence Doppler Broadening of Annihilation Radiation"

41st Polish Seminar on Positron Annihilation (PSPA-13) **Sep 2013**

Maria Curie-Sklodowska University, Lublin, Poland

Oral talk "Application of positron spectroscopy for detection of nanostructures in alcohol—aqueous mixtures"

Professional Networks

- Discover my professional contacts on LinkedIn (200+ connections).
- Get familiar with my scientific career on ResearchGate.
- Skim through the list of my publications on Google Scholar (24 articles, 200+ citations).
- Find examples of my code on GitHub (50+ repositories).
- Check out my UI design portfolio on Dribbble (50+ shots).

Interests

Linux and open-source software. Hosting an open-source project aimed at keyboard remapping under Linux (over 250 stars on GitHub).